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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/619,181	07/15/2003	Kouji Takahashi	Q76587	4972
23373	7590	07/06/2006	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			KINNEY, ANNA L	
			ART UNIT	PAPER NUMBER
			1731	

DATE MAILED: 07/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/619,181	Applicant(s) TAKAHASHI ET AL.	
	Examiner Anna Kinney	Art Unit 1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 1-6, 18 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-15 and 17 is/are rejected.
- 7) ☒ Claim(s) 12 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/04; 12/04; 12/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group II, claims 7-17, in the reply filed on May 24, 2006 is acknowledged. The traversal is on the ground(s) that the features of the claims in Group III depend from the features recited in the claims of Group II. The applicant has not traversed the restriction of Group I. This is not found persuasive because the limitations of claim 18, the independent claim of Group III, do not require the method steps of claims 7-17, the claims of Group II. Furthermore, the Examiner has established a burden with respect to classification and search.

The requirement is still deemed proper and is therefore made FINAL.

Specification

The disclosure is objected to because of the following informalities: the Examiner noted a spelling error on pg. 2, last ¶, line 2; "defected" should be "detected". The Examiner suggests that the applicant review the specification for further informalities.

Appropriate correction is required.

Claim Objections

Claim 12 is objected to because of the following informalities: in lines 1-2 of the claim, the phrase "whereby to produce a glass substrate" does not appear to recite any additional limitations. The Examiner suggests deleting the phrase. Appropriate correction is required.

Claim 16 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim.

See MPEP § 608.01(n). Accordingly, the claim has not been further treated on the merits.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 7 and 10 rejected under 35 U.S.C. 102(b) as being anticipated by JP 48-006925.

With respect to claims 7 and 10, JP '925 discloses a method of producing a glass article (e.g, glass substrate for a mask blank), comprising a step of grinding for eliciting a defect remaining on the main surface of the glass substrate, wherein a post-processing step that that the Examiner construes to include precision polishing is carried out after the step for eliciting a defect (Abstract).

With respect to claim 17/10, JP '925 discloses etching that removes the surface of the glass substrate that is subjected to precision polishing by 10-50 microns (Abstract, lines 1-8), which provides for the 0.01 to 0.2 μm and removes additional glass surface.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 48-006925 in view of Fujimura et al (U.S. 2002/0000098 A1).

With respect to claim 8, the abstract of JP '925 does not disclose expressly that the precision polishing step is followed by a cleaning step.

Fujimura discloses a method of producing a glass substrate with a post-processing step comprises a polishing step that the Examiner construes to be a precision polishing step for providing the main surface with precision polishing and a cleaning step for cleaning the main surface after the precision polishing step (pg. 2, col. 1, ¶¶ 0016 lines 1-3 and ¶ 0017).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to clean the main surface after precision polishing as described by Fujimura in the glass substrate production method of JP '925 to obtain the invention as specified in claim 8.

The motivation would have been to eliminate needle-like projections deposited on the surface (pg. 1, col. 2, ¶¶ 0010 and 0011).

With respect to claim 9, the abstract of JP '925 does not disclose expressly the surface roughness of the glass substrate.

Fujimura discloses that the main surface of the glass substrate after the cleaning step has an arithmetically averaged roughness of 1.6 to 2.7 angstroms (converts to .16 to .27 nm; pg. 3, col. 2, Table 1, 1st row; pg. 4, col. 1, Tables 2 and 3, 1st row; col. 2, Tables 4 & 5, 1st row), with specific values of 1.6, 1.7, and 1.8 angstroms, which

provides 3 specific points within the claimed range of 0.2 nm or less in terms of the root mean square roughness (RMS).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 48-006925 and Fujimura et al as applied to claims 8 and 9 above, and further in view of Admitted Prior Art (Specification, pgs. 1-6).

With respect to claim 11, the abstract of JP '925 does not disclose expressly an inspection step after cleaning. Fujimura discloses a step of determining surface roughness values, but does not disclose expressly inspecting for defects.

Admitted prior art discloses a defect inspection step that follows the cleaning step (pg. 2, lines 3-5 and pg. 5, lines 17-22).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to inspect a glass substrate after cleaning as described by Admitted prior art in the glass substrate production method of JP '925 and Fujimura to obtain the invention as specified in claim 11.

The motivation would have been that if glass substrates used to make photomask blanks having under-film defects are used to make photomasks, the patterns formed on the photomasks will incur disconnection, leading to defects (pg. 4, lines 11-17).

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 48-006925 as applied to claim 7 above, and further in view of Admitted Prior Art.

With respect to claim 12, JP '925 discloses a method of producing a glass article (e.g., substrate for a mask blank) by carrying out a glass grinding process (e.g., a rough

polishing step) for polishing a surface of the glass substrate by using abrasive particles having a predetermined average particle size, then a polishing step which the Examiner construes to be a precision polishing step for polishing the surface of the glass substrate by using abrasive particles that the Examiner construes as having an average particle size that is smaller than the aforesaid predetermined average particle size, wherein, prior to the precision polishing step, the surface of the glass substrate is treated with a corrosive solution (e.g., etched to elicit a crack; Abstract, lines 1-8).

The abstract of JP '925 does not disclose expressly the nature of the crack, or a defect inspection step.

Admitted Prior Art discloses cracks which extend from the surface of the glass substrate in the direction of the depth and remain after the precision polishing step (pg. 6, lines 3-9), and further discloses a defect inspection step carried out after the precision polishing step (pg. 4, lines 4-10).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to inspect a glass substrate after cleaning and to expect cracks as described by Admitted prior art in the glass substrate production method of JP '925 to obtain the invention as specified in claim 12.

The motivation would have been that if glass substrates used to make photomask blanks having under-film defects are used to make photomasks, the patterns formed on the photomasks will incur disconnection, leading to defects (pg. 4, lines 11-17), and that such cracks develop in a lapping step due to local pressure

applied to the cracks by an abrasive compound of cerium oxide or the like during rough polishing (pg. 6, lines 3-7).

With respect to claim 17/12, JP '925 discloses etching that removes the surface of the glass substrate that is subjected to precision polishing by 10-50 microns (Abstract, lines 1-8), which provides for the 0.01 to 0.2 μm and removes additional glass surface.

Furthermore, Admitted Prior Art discloses etching that removes the surface of the glass substrate that is subjected to precision polishing by 0.2 to 0.5 μm (pg. 6, lines 12-14), which contains one specific endpoint of the claimed range of 0.01 to 0.2 μm .

Claim 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '925 and Admitted Prior Art as applied to claim 12 above, and further in view of Fujimura.

With respect to claims 13 and 14, The abstract of JP '925 and Admitted Prior Art do not disclose expressly a cleaning step after the precision polishing step.

Fujimura discloses a cleaning step, and a surface roughness within the claimed range, as applied in the rejection to claims 8 and 9, above.

With respect to claim 15, the abstract of JP '925 does not disclose cleaning, and Admitted Prior Art does not disclose expressly that it is known to perform a cleaning step having an etching function.

Fujimura discloses that well-known techniques of grinding, polishing, and cleaning can be used, including an acid cleaning step (pg. 1, col. 2, ¶ 0011), with acids that are known to have an etching function. Fujimura does not disclose expressly how

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much substrate is removed during the cleaning step. However, at the time of the invention, it would have been obvious to a person of ordinary skill in the art that performing the same process step under the same conditions with the same materials would produce the same result as that claimed.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The International Search Report identified one "X" reference and 3 "Y" references. At this time, the Examiner has not applied the "X" reference, WO 01/09680, because the reference is relevant to claims 1-6, which are drawn to a non-elected group. The Examiner has also not applied EP 1219575, which shows polishing of a glass substrate followed by cleaning and etching, and JP 63-114866, which shows etching and polishing of a glass substrate, because the Examiner considers the references applied above to adequately read on the claims at this time. U.S. 2002/0011079 A1 shows a process for producing a glass substrate comprising polishing, cleaning, and etching steps. U.S. 6,547,980 shows a method of manufacturing a glass substrate including a cleaning step using an acid or an alkali or both.

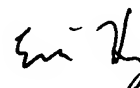
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anna Kinney whose telephone number is (571) 272-8388. The examiner can normally be reached on Monday through Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ALK



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PRIMARY EXAMINER